



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/057,575	01/25/2002	Xian J. Ning	01-P-18264 US	1882

7590 04/02/2004

Kay Houston  
Slater & Matsil, L.L.P.  
c/o Infineon Technologies North America Corp.  
17950 Preston Road, Suite 1000  
Dallas, TX 75252

EXAMINER
----------

TALBOT, BRIAN K

ART UNIT	PAPER NUMBER
----------	--------------

1762

DATE MAILED: 04/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

AS

<b>Office Action Summary</b>	<b>Application No.</b> 10/057,575	<b>Applicant(s)</b> NING, XIAN J.	
	<b>Examiner</b> Brian K Talbot	<b>Art Unit</b> 1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 March 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 2-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/15/04 has been entered.
2. Claim 1 has been canceled. Claim 28 has been added. Claims 2-28 remain in the application.
3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. In light of the amendment filed 7/25/03, the 35 USC 103 rejections have been withdrawn. The following 35 USC 103 rejections have been necessitated by the amendment.

***Claim Rejections - 35 USC § 103***

5. Claims 2-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wong et al. (2002/0153551) in combination with Johnson et al. (6,417,535 B1).

Wong et al. (2002/0153551) teaches a method of making a metal-insulator-metal capacitor using plate-through mask techniques. The method includes depositing an ILD layer, forming trenches therein by damascene process, depositing a conductive liner and a seed layer, covering the area for MIM with a resist and depositing a metal layer in the other trenches, removing the resist, forming dielectric layer and subsequent conductive layers and finally the layers are planarized. The metal layers are formed by CVD, PVD plating and consist of W, Cu, Ti, TiW, TiN, etc. The conductive liner is TaN or Ta. (col. 2, [0029] – col. 3, [0040])

Wong et al. (2002/0153551) fails to teach trenches for the capacitor and the conductive lines being equal in height and width substantially having vertical sidewalls.

Johnson et al. (6,417,535 B1) teaches forming vertical MIM capacitors whereby trenches for the capacitor and conductive features are equal in height and width substantially having vertical sidewalls (see Figs. 1-23 and col. 4, line 62 - col. 12, line 30).

Therefore, it would have been obvious for one skilled in the art at the time the invention was made to have modified Wong et al. (2002/0153551) process by incorporating trenches with equal dimensions as evidenced by Johnson et al. (6,417,535 B1) with the expectation of similar results.

***Response to Arguments***

6. Applicant's arguments with respect to claims 2-28 have been considered but are moot in view of the new ground(s) of rejection.

Applicant argued that the trenches are of different dimensions contrary to the amended claims.

Johnson et al. (6,417,535 B1) teaches trenches for the capacitor and the conductive lines being equal in height and width substantially having vertical sidewalls.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian K Talbot whose telephone number is (571) 272-1428. The examiner can normally be reached on Monday-Friday 6AM-3PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive P Beck can be reached on (571) 272-1415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 1762

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Brian K Talbot  
Primary Examiner  
Art Unit 1762

BKT